



Practice Masters Level B

7.3 Products and Factors of Polynomials

Write each product as a polynomial in standard form.

1. $(3x + 4)(2x^3 - 4x^2 + 5x + 2)$

2. $(-2x + 5)(-4x^3 - 2x + 6)$

3. $(2x - 5)^3$

4. $(3x + 2)^2(2x - 3)$

Use substitution to determine whether the given linear expression is a factor of the polynomial.

5. $4x^3 - 3x^2 + 2x + 9; x + 1$ _____

6. $-5x^4 - 3x^3 - 6x; x - 3$ _____

7. $x^5 - 1; x - 1$ _____

8. $\frac{1}{2}x^3 + \frac{1}{3}3x^2 + \frac{1}{2}x + \frac{1}{3}; x + 2$ _____

Divide by using long division or synthetic division.

9. $(3x - 7x^2 + 10) \div (x - 3)$

10. $(4x^3 - 2x^2 + 2x + 3) \div (-x - 2)$

11. $(-6x^4 + 2x^3 - 6x + 1) \div (x^2 + 3x - 1)$

12. $(x^5 + 2x) \div (5 - x)$

13. $(4 + 7x - 6x^2) \div (x + 3)$

14. $(-5x^3 + 3x^2 + 4x - 2) \div (x - 5)$

15. $(x^3 - 4) \div (x + 4)$

16. $\left(\frac{1}{2}x^3 - 2x^2 + \frac{1}{2}x - 1\right) \div \left(x - \frac{1}{2}\right)$

For each function below, use synthetic division or substitution to find the indicated value.

17. $P(x) = -x^4 + 6x^3 + 2x^2 - 10x - 8; P(2)$ _____

18. $P(x) = 2x^{47} + 6x^{15} + 3x^{12}; P(-1)$ _____

19. $P(x) = 0.7x^4 - 0.2x^3 + 0.1x^2 + 0.3x - 4; P(2.1)$ _____